

USSR

LIKHODAYEVA, YE. A., and SHENDEROV, YE. I., Akusticheskiy Zhurnal, No 27,  
vyp 1, 71, pp 79-84

of flexural waves in a plate, if the influence of the liquid on their  
propagation is taken into account.

This article contains 3 figures, 1 table, and 5 equations; eight  
literature references are cited.

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USSR

UDC 534.26

SHENDEROV, Ye., L., Leningrad

"High-Frequency Asymptotic Behavior of the Solution of the Problem Concerning the Passage of Sound Through an Elastic Shell"

Moscow, Akusticheskiy Zhurnal, No. 2, Apr/May/Jun 71, pp 290-298

Abstract: The high-frequency asymptotic behavior of the sound field arising after passage of sound through an elastic shell of arbitrary shape is discussed. It is noted that exact solutions for problems of the passage of sound through elastic shells have been obtained only for shells of the simplest forms, such as a cylinder or sphere, by the method of separation of variables. The importance of finding solutions permitting an evaluation of the effect of curvature on the passage of sound through shells for large values of the parameter  $kR$  is pointed out, where  $k$  is the wave number in the medium and  $R$  is the radius of curvature of the shell. Two factors leading to a change in the coefficient of the passage of sound through a curved shell as compared with the coefficient of the passage of sound through a plate are discussed: the first is the change in mechanical characteristics of the shell associated with the change in hardness under bending, and the second is the

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SHENDEROV, Ye. L., Akusticheskiy zhurnal, No. 2, Apr/May/Jun 71, pp 290-298

change in conditions of excitation and radiation of sound of a curved surface as compared with radiation of sound by a plane. Sound waves inside and outside the shell are represented in the form of solutions of a system of integrodifferential equations describing the motion of the shell. Ray series consisting of expansions in terms of inverse powers of the wave number are applied to determine the asymptotic behavior for large values of the wave radius of curvature. The quasilocal mechanical impedance of the shell is introduced to solve the oscillation equation. The effect of the change in the mechanical properties of the shell due to its curvature and the effect of a change in the radiation conditions are analyzed in the approximate solution. The first three terms of the series in terms of inverse powers of the wave radius of curvature of the shell are given.

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USSR

UDC 576.851.12.095.14

GUSEV, M. V. and SHENDEROVA, I. V., Soil Biology Faculty, Moscow State University imeni M. V. Lomonovsov

"The Effect of Light and Some Inhibitors on Oxygen Absorption by Photosynthesizing Bacteria"

Moscow, Mikrobiologiya, Vol 40, No 4, 1971, pp 638-644

Abstract: The effect of light and selective blockage by inhibitors of some oxidation reactions on the oxygen absorption by suspensions of photosynthesizing bacteria (obligate and facultative anaerobes) were compared. Purple bacteria *Rhodopseudomonas spheroides* and *Ectothiorhodospira shaposhnikovii* (facultative anaerobes), purple sulfur bacteria *Chromatium minutissimum* and green sulfur bacteria *Chloropseudomonas ethylica* (both obligate anaerobes) were studied. In the absence of exogenous substrates, oxygen absorption is not responsive to amytal and cyanide. Reactions can be either stimulated by light, indifferent to it, or inhibited by it. The inclusion of exogenous oxidizable components in the reaction with oxygen triggers new processes that are dependent or independent of the respiratory inhibitors investigated. Oxygen absorption of *Rh. spheroides* and *Ect. shaposhnikovii* was greatest in the presence of alpha-ketoglutarate, and 1/2

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GUSEV, M. V. and SHENDEROVA, L. V., Mikrobiologiya, Vol 40, No 4, 1971, pp 638-644

less in the presence of malate or succinate. The effect of fluoroacetate on oxygen absorption by suspensions of photosynthesizing bacteria in darkness was investigated using four substrates. A suggested scheme for oxygen absorption in photosynthesizing bacteria is proposed. It was concluded that the anaerobic properties of *Chr. minutissimum* are less pronounced than those of *Chr. ethylica*.

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SHENDEROVA, V. L.

GENEALOGICAL STUDIES RELATED TO SCHIZOPHRENIA

UDC: 616.895.8-056.75

50:3495 53378

16 JUN 71

[Article by L.V. Shenderova-Ravlova, L.L. Akopov, L.K. Igolova, T.M. Styrchenko, V.I. Shenderova, Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 5, May 1971, pp 46-50]

Extensive investigations of recent years have confirmed the previously known fact that there is definite accumulation of pathology in the families of schizophrenics. The studies of Rosenthal, Kety, Kendler, Heston, and others, based on representative material, revealed that "disorders in the schizophrenic spectrum" (Rosenthal) are encountered more often, with statistical reliability, in the blood relatives of a proband as compared to the total population. However, practice has shown that discrete forms of psychosis and different types of borderline states, as well as marked personality anomalies may be detected, described, and classified only if the physician makes a complete examination of the family. Therefore, a meticulous clinical description of the proband and their immediate relatives should be the basis of a genealogical study which is the first stage of genetic analysis.

The present study is based on observations made in the genetic group of the Institute of Psychiatry, USSR AMS [Academy of Medical Sciences] in 1965-1969. The genealogical method was used to study 270 families of patients with different forms (continuous, sporadic processual, and periodic) of schizophrenia.

We did not make the traditional division of probands into Kraepelin's types, since such division is based on static syndromal evaluation. In the leading syndrome at the time the patient is examined is used as the basis. This does not take into consideration the course of the disease as a whole. Studies pursued at the Institute of Psychiatry, USSR AMS, for a number of years revealed that such a basic parameter as course is the closest to the biological essence of the process.

The classification of schizophrenia according to type of course, which has been adopted at the Institute of Psychiatry, USSR AMS, is quite consistent with the division of endogenous psychoses established in psychiatry (Table 1).

USSR

UDC: 551.062:536.531.087.6

KLEBAN, L. S., SHENDEROVICH, I. M.

"The UATGMS Water Temperature Gage"

Tr. NII gidrometeorol. priborostr. (Works of the Scientific Research Institute of Hydrometeorological Instrument Building), 1972, vyp. 26, pp 53-58 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 6, Jun 72, Abstract No 6.32.692)

Translation: A system for measuring water temperature is considered which is designed for use in UATGMS automatic hydrometeorological stations. The sensitive element is a platinum resistance thermometer which is hermetically sealed in a casing. The resistance thermometer is protected on the outside by a metal jacket, which at the same time increases the coefficient of inertia of the thermometer. The overall instrumental error of the resistance thermometer is no greater than  $0.1^{\circ}$ . During tests of two resistance thermometers, limiting errors were calculated by the  $3\sigma$  law. They were equal to  $0.21$  and  $0.32$  degree respectively. Maximum difference of readings is no greater than  $0.15^{\circ}\text{C}$ . The coefficient of inertia as determined during tests ranged from 25 to 104.5 s. Two illustrations, one table, bibliography of two titles. V. S. K.  
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USSR

UDC 616.988.75(A2)-06:616.981.25]-092.4:57.085.23

TOKAR', R. G., ZAKSTEL'SKAYA, L. Ya., and SHENDEROVICH, S. R., Vladivostok  
Scientific Research Institute of Epidemiology and Microbiology; Institute of  
Virology imeni Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Results of a Combined Infection of Tissue Culture With Influenza Virus A2 and  
Staphylococcus"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 48, No 6,  
Jun 71, pp 100-103

Abstract: Reports indicating the possible role of Staphylococci in the development of postinfluenzal pneumonia in children prompted experimental investigations to determine the combined effect of influenza virus A2 and Staphylococcus in infection of cell cultures. A tissue culture of a trypsinized fetal human kidney in culture medium No 199 with bovine serum and maintenance medium with aminopeptide was infected with influenza virus A2 Hong Kong 1/68. Within 24, 48, 72, and 96 hours, pathogenic strain No 239 and nonpathogenic strain No 112 of Staphylococcus were added to the culture. Within 24, 48, 72, 96, and 120 hours of the addition of Staphylococci, virological and bacteriological examinations were conducted. It was found that influenza virus A2 caused no

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TOKAR', R. G., et al, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii,  
Vol 48, No 6, Jun 71, pp 100-103

cytopathic changes in the tissue culture. The addition of Staphylococci, however, induced pronounced cytopathic changes, resulting in degeneration of a large number of cells. Changes induced by the nonpathogenic strain No 112 were not quite as pronounced as those caused by strain No 239. It was established that the addition of the pathogenic strain of Staphylococcus stimulated virus reproduction and intensified viral infectious activity. In the presence of the influenza virus, Staphylococci completely retained viability, and no changes in pigment formation, lecithinase or hyaluronidase activities were noted. The pathogenic properties of Staphylococcus strain No 239 were somewhat enhanced.

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USSR

UDC 576.858.75.095.383

ZAKSTEL'SKAYA, L. Ya., and SHENDEROVICH, S. F., Institute of Virology imeni  
D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"The Mechanism of Interference of Respiratory Syncytial Virus With Influenza  
A2 Virus"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 70, pp 552-555

Abstract: Influenza A2 virus and respiratory-syncytial virus are in the same class of myxoviruses but differ in various respects. When a tissue culture is concurrently infected with both of these viruses, interference takes place. To investigate the mechanism of this phenomenon, the V-antigen, an inactive hemagglutinating preparation of influenza virus was used. It was shown that V-antigen is adsorbed on the surface of a culture of human embryonic kidney cells causing short-duration (maximum, 25 hours) but strong hemadsorption. Pretreatment of the cell culture with V-antigen of influenza A2 virus inhibits the multiplication of both homologous virus and the RS virus in that system.

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USSR

UDC 576.858.75(A2)095.38:576.858(R3)

SHENDEROVICH, S. F., and ZAKSTEL'SKAYA, L. Ya., Institute of Virology imeni  
D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Interaction of Influenza A2 and Respiratory Syncytial Viruses in a Mixed Infection"  
Moscow, Voprosy Virusologii, No 4, Jul/Aug 70, pp 473-477

Abstract: Influenza A2 virus and respiratory syncytial virus multiplied readily in human embryo tissue culture when optimum infective doses were used (0.001 EID<sub>50</sub>/cell and 0.01 TID<sub>50</sub>/cell, respectively). However, inoculation of the culture with both viruses resulted in mutual interference with reproduction. Influenza virus added in large or small doses after the culture had already been inoculated with respiratory syncytial virus, markedly limited and slowed the reproduction of the latter. Reproduction of influenza virus in cells subsequently inoculated with respiratory syncytial virus likewise declined, but to a lesser extent.

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USSR

UDC 616.988.75-036.2(47.497.2)

ZAKSTEL'SKAYA, L. YA., NIKOLOVA, Z., ANTONOVA, I. V., KEBEDZHIVY, G.,  
YEVSTIGNEYEVA, N. A., and SHELDEROVICH, S. F., Institute of Virology and  
D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow, and Scientific  
Research Institute of Epidemiology and Microbiology, Sofia

"A Comparative Study of the 1969 Influenza Epidemic in the Soviet Union  
and in the People's Republic of Bulgaria"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 71, pp 656-661

Abstract: The influenza epidemics which lasted from December 1968 to April 1969 in the USSR, afflicting 12.4% of the population, and from February to April 1969 in Bulgaria, afflicting 5.9% of the population, had several common characteristics: both were of foreign origin (brought in by travellers), both developed more gradually but lasted longer than previous epidemics, and the severity of the diseases was mild to moderate, so that no special disruptions occurred either in business or in schools. Over 2,000 strains of virus A2 were isolated in the USSR, or which 439 were investigated, while 226 strains of the same virus were isolated and investigated in Bulgaria. All these strains formed a homogeneous antigenic group, with variant A2 (Hong Kong)68 predominating. Virioloical, serological, and immunofluorescent tests revealed that this variant differed considerably from the

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ZAKSTEL'SKAYA, L. YA., et al., Voprosy Virusologii, No 6, Nov/Dec 71, pp 656-661

parent strain A2(Singapore)57 and from the subtype A2 which proliferated in 1964-1967 but was practically identical with the subtype A2/3. .

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Acc. Nr.: **AP0029499**

Ref. Code: UR 0297 **4**

PRIMARY SOURCE: Antibiotiki, 1970, Vol **15**, Nr 1, pp 25-28

A STUDY OF THE CHEMICAL COMPOSITION AND ANTITUMOR ACTIVITY  
OF PROTAMINES, ISOLATED FROM STURGEON MILT

Yermol'yeva, Z.V.; Silayev, A.B.; Yulikova, Ye.P.;

Pokidova, N.V.; Pasternak, N.A.; Kolosova, I.V.;

Yevseyenko, I.K.; Shenderovich, V.A.

Central Post Graduate Medical Institute, Moscow State University

Triprotamines in the form of sulfates were isolated from the milt of individual sturgeon stocks. The amino acid composition of triprotamines was determined and their antitumor activity was studied. It was shown that protamine from *Ac. guldenstadti* and *Ac. steliatus* inhibited tumor growth by 60-80 per cent, while protamine from *Ac. nudiventris* was practically inactive.

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REEL/FRAME

**19681100**  
**7m**  
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UR 0482

S  
Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

242973 MAGNETIC MEMORY SYSTEM has memory cells (1), coordinates X (2) and Y (3), adder (4) and one of its input (5) is connected to coordinates (X) the other (6) to coordinates (7). When the memory system is interrogated, the output appears at (5) & (6).

In fig. (2) the function of adder takes a magnetic core in which in opposition are passed the excitation coordinates (5) & (6). The error signal is formed in the winding (7) which is passed to the fault fixing point in the path of the address.

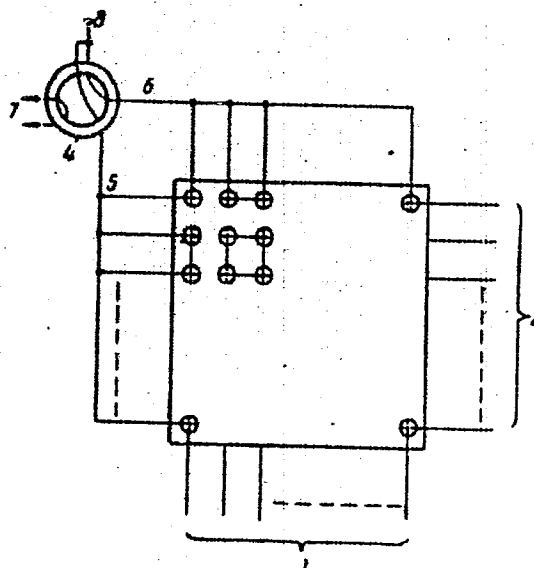
25.3.68 as 1229102/18-24. L.I. SHAPIRO & Y.I. SHENDER-  
OVICH (17.9.69) Bull6/5.5.69. Class 21a.Int.Cl.G11c.

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USSR

SHENDEROVSKIY, V. A., Institute of Physics, UkrSSR Academy of Sciences, Kiev  
"Plasma-Electric Effect in Semiconductors With Nonparabolic Band Structure  
in a Strong Electric Field"

Leningrad, Fizika Tverdogo Tela, Vol 15, No 9, Sep 73, pp 2718-2723

Abstract: The paper examines the effect of development of direct current or voltage (in the case of a closed or open external circuit respectively) with propagation of longitudinal oscillations in a nonequilibrium semiconductor plasma. It is shown that deviation of the law of dispersion of carrier energy from the isotropic parabolic ideal in the presence of a strong electric field which heats the carriers leads to the appearance of an additional term in the magnitude of the direct current which does not occur in an equilibrium plasma. Under certain conditions this contribution may become major. Expressions are derived for the current as a function of the frequency and wave vector of the oscillations, as well as the magnitude and orientation of the external electric field for semiconductors of the n-InSb and p-Ge type.

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USSR

SHENDEROVSKIY, V. A. (Institute of Physics, Ukrainian Academy of Sciences, Kiev)  
"Current Fluctuation in Degenerate Nonparabolic Polar Semiconductors in a Strong  
Electrical Field"

Kiev, Ukrainskiy Fizicheskiy Zhurnal; November, 1971; pp 1907-11

ABSTRACT: The author studied the longitudinal and transverse current fluctuation in nonparabolic semiconductors in a strong electrical field, taking into account the possibility of degeneration of the current carriers. Scattering by optical phonons was the basic mechanism of carrier scattering.

Numerical calculations of the current fluctuation were made and graphs are shown for the dependence of  $(\delta j_K^2)_{\omega}$  on the magnitude of the applied field. For semiconductors of the group  $A_3B_5$  the longitudinal as well as transverse components of the current fluctuation were determined by the fluctuations of the symmetrical and antisymmetrical parts of the distribution function.

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UNCLASSIFIED  
TITLE--FLUCTUATIONS IN A NONEQUILIBRIUM SEMICONDUCTOR PLASMA. I. LOW  
RESISTANCE SEMICONDUCTORS -U-  
AUTHOR--(02)--TOMCHUK, P.M., SHENDEROVSKIY, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--UKRAIN'SKII FIZICHNII ZHURNAL, VOL. 15, APR. 1970, P. 632  
DATE PUBLISHED--70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--SEMICONDUCTOR PLASMA, SEMICONDUCTOR BAND STRUCTURE,  
ANISOTROPY, CHARGE DENSITY, PLASMA OSCILLATION, PLASMA WAVE, ELECTRIC  
FIELD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--2000/1347  
CIRC ACCESSION NO--AP0124997  
STEP NO--UR/0185/70/015/000/0632/0632  
UNCLASSIFIED

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CIRC ACCESSION NO--AP0124997 UNCLASSIFIED  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL STUDY OF THE INFLUENCE  
OF THE SHAPE OF ENERGY BANDS ON THE FLUCTUATION PHENOMENON IN A  
NONEQUILIBRIUM SEMICONDUCTOR PLASMA. IT IS SHOWN THAT IN SEMICONDUCTORS  
WITH AN ANISOTROPIC BAND (AS WELL AS IN P TYPE GE AND SI) ANOMALOUS  
FLUCTUATIONS OF CHARGE DENSITY ARE POSSIBLE WHICH ARE ENTIRELY CAUSED BY  
THE SHAPE OF THE BAND AND THE ACTION OF A STRONG ELECTRIC FIELD. IN  
SEMICONDUCTORS WITH A NONPARABOLIC BAND, THE MAXIMUM SPECTRAL DENSITY OF  
THE CHARGE FLUCTUATIONS SHIFTS WITH A CHANGE IN THE EXTERNAL FIELD  
STRENGTH. THE EFFECT OF BAND SHAPE ON PLASMA WAVE ATTENUATION IS ALSO  
CONSIDERED. FACILITY: AKADEMIIA NAUK UKRAINS'KOI RSR, INSTITUT  
FIZIKI, KIEV, UKRAINIAN SSR. PROCESSING DATE--30OCT70

UNCLASSIFIED

USSR

KRAMSKOY, G. D.; KURILKO, V. I.; SHENDRIK, V.A. (Physicotechnical Institute of the Ukrainian Academy of Sciences, Kharkov)

"Theory of Lateral Instability of a Beam in the Resonator Section of a Linear Electron Accelerator"

Kiev, Ukrainskiy Fizicheskii Zhurnal; October, 1972; pp 1608-16

ABSTRACT: The authors develop a theory of the lateral instability of a relativistic electron beam caused by the effect of a build-up, in the resonator section of an accelerator, of a spontaneous Cerenkov radiation of beam clusters on a defocussing, axially unsymmetric wave. A problem concerning deviation of the beam when acted upon by the wave is solved by a self-consistent approximation. Analytic expressions are found which determine the dependence of a lateral shift of a cluster on its number, the parameters of the accelerator (geometry, quality factor, intensity of the accelerating field), energy, and beam current. It is shown that in the case of the resonator section a build-up of lateral instability has a threshold character: when the beam current exceeds some threshold value, the lateral displacement of the beam increases exponentially with time. The analytic variations of the threshold currents with the parameters of the accelerator, injection energy, and intensity of the accelerating field are found.

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The theoretical results agree satisfactorily with the experimental data.

- END -

Acc. Nr: **AP0044152**

Ref. Code: UR 0244

PRIMARY SOURCE: Voprosy Pitaniya, 1970, Vol 29, Nr 1,  
pp 61-66

CORRELATION BETWEEN THE CONTENT OF POLYCYCLIC CARCINOGENS  
IN ANIMAL FOOD PRODUCTS AND IN FODDER FOR FARM ANIMALS

N. D. Gorgolova, P. P. Dikun, A. P. Dmitrochenko, N. D. Krasnitskaya,  
A. I. Cherenanova, I. A. Shendrikova (Leningrad)

Summary

Rabbits, pigs, cows, chicken and ducks received during different periods of time (up to one year) fodder containing 3,4-benzpyrene. Animals and poultry were sacrificed 24 hours on termination of the experiment and their tissues and organs analyzed for the benzpyrene content. Meat and separately fat, and in some instances also liver, blood, etc were, as a rule, taken for analysis. Milk of experimental cows was used for feedings calves, whose meat, liver and blood were then also subjected to examination. Investigations also covered milk of experimental cows and chicken eggs. Control assays were a common practice as well. Meat and other objects under examination either contained no 3,4-benzpyrene at all, or demonstrated merely its traces. Hence, the presence in fodder of relatively large amounts of benzpyrene does not cause this carcinogen to appear in animal food products. Studies were also made as to the amount of intact benzpyrene passed from the organism of rabbits, cows, calves and chicken.

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REEL/FRAME  
19770633

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USSR

UDC:621.365.2+669.046.54/55

BORZENKOV, D. V., TRAKHIMOVICH, V. I., SHENDYAPIN, V. D., and KABLUKOVSKIY, A. F.  
"Refining of Iron-Nickel Lump in Electric Furnaces"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 143-148

Translation: Data are presented on melting of a charge pig based on iron-nickel lump containing 2% nickel, up to 0.2% each phosphorous and sulfur in 5 T electric arc furnaces. The influence of the lump composition and technology of melting on the technical and economic indicators of melting is studied. The use of lump in melting high-quality steel with preliminary refining allows steel with low content of nonferrous impurities to be produced. 4 figures; 2 tables; 3 biblio. refs.

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USSR

UDC 624.07:534.1

YEGOROV, A. I., SHENFEL'D, G. B.

"A Problem in the Optimal Control of Bending Oscillations of a Beam"

Tr. Frunz. politekhn. in-ta (Works of Frunze Polytechnical Institute), 1971, No. 45, pp 77-89 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V338)

Translation: The optimal control of bending oscillations is sought for three forms of fastening of an elastic beam (rigid, hinge, free). The problem is reduced to the minimization of one of two functionals, where one characterizes the bending and the second characterizes the energy of the oscillations of the beam. The uniqueness of the solution is proved. In the case of a homogeneous beam of constant transverse cross section a solution is obtained for the optimal control in the form of an infinite series in terms of eigenfunctions. The coefficients of the series are evaluated and are functions of the parameters of the functionals. The convergence of the series is proved whence follows the possibility of representing the control by a terminating series. L. V. Selezova.

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UDC 577.1:615.7/9

USSR

ABESADZE, A. I. and SHENGELAYA, A. L.

"Mechanisms of the Hepatotropic Effect of Carbon Tetrachloride"

V sb. Materialy III Zakavkaz. nauch. konf. patofiziologov, 1972 (Proceedings of the 3rd Transcaucasian Scientific Conference of Pathophysiologists, 1972), Tbilisi, 1972, pp 25-27 (from RZh-Biologicheskaya Khimiya, No 4, Feb 73, Abstract No 4 F1884 by D. N. Glukharev)

Abstract: Acute toxic hepatitis was induced in dogs by 5 injections of  $\text{CCl}_4$  (at 48-hour intervals) at a dose of 0.2 ml/kg (in persic oil, 1:1). The activities of cytoplasmatic (aldolase, aspartate and alanine aminotransferases, alkaline phosphatase) and mitochondrial (histidase, urokinase) enzymes, some parameters of lipid metabolism (total and esterified cholesterol, free fatty acids,  $\beta$ -lipoproteins), and liver excretory function (sulfobromophthalein test) were determined. Fifteen minutes and 1 hour after the first injection of  $\text{CCl}_4$  there was a significant increase in urokinase and histidase activities, respectively, along with a decrease in liver excretion. The subsequent injections of  $\text{CCl}_4$  resulted, in addition to these changes, impairment of other metabolic elements. After the 5th injection histidase and urokinase activities in the liver decreased and acute liver degeneration developed. It was concluded that  $\text{CCl}_4$  has a direct effect on hepatocyte function.

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TABIDZE, Sh. A. and SHENGELIYA, I. A., Problemy Tuberkuleza, No 12, 1971, pp 1-6

than that indicated by the results of the standard test (intradermal injection of 5 TU of tuberculin). There is no relationship between the degree of tuberculin sensitivity and severity of the course of the disease.

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Acc. Nr:

AP0044403

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiy Zhurnal, 1970, Vol 56,  
Nr 1, pp 48-54  
INFLUENCE OF HYPOTHALAMIC AREA ON CILIARY BODY SECRETORY  
ACTIVITY

Bekauri, N. V.; Fadeyeva, O. N.; Chuzhkov, M. I.; Shenger, I. S. F.

From the I. P. Pavlov Institute of Physiology, USSR Ac. Sci., Leningrad

The effect of electro-stimulation in the hypothalamic area on the secretory activity of the ciliary body has been studied in rabbits and cats. This activity was evaluated by the level of intraocular pressure. Acute experiments in cats have demonstrated that stimulation of various parts of the hypothalamic area (particularly its posterior part) brings about a lowering of intraocular pressure during the 2-3 hrs following stimulation without a corresponding fall in arterial pressure.

In chronic experiments in rabbit stimulation of the mammillary body in the hypothalamic region by electric current or adrenalin electrophoresis into this area evoked during 3-4 hrs following stimulation a lowering of intra-ocular pressure, preferably on the stimulated side.

Data obtained point to the participation of the hypothalamic area in regulating the ciliary body activity and to the role of both the neural and hormonal factor therein.

REEL/FRAME  
19771021

MTT

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UDC 532.517.4

BORONIN, V. V., ALEKSANDROV, M. A., MIROSHNICHENKO, G. V., SHENIN, Ye. K.

"Study of the Structure of Turbulence With the Aid of the 'Dnepr-1' Controlling Computer"

Tr. VNII gidrotekhn. i melior. (Works of the All-Union Scientific Research Institute of Hydraulic Engineering and Land Reclamation), 1972, Vol. 53, pp 167-179 (from RZh-Nekhanika, No 3, Mar 73, Abstract No 3B1062)

Translation: The results of a computer assisted automated calculation of the physical characteristics of the turbulence field with direct recording of measurements into the ready access memory of the computer are presented. Using transducers based on measuring the force action of the flow on the receiving element mechanically connected to the tensometric converter, the flow of water into a hydraulic chute with a working area of  $160 \times 160$  mm was investigated. The frequency of interrogation of the transducers was 100 Hz and the time for carrying out the process was 20 sec. The distributions of the average velocity, the intensities of the pulsations in the flow rate and pressures and certain correlation functions are given for the range of Reynolds numbers  $10-50 \cdot 10^3$ . The effect of measurement time on the values measured was investigated. The results are similar to results of other investigators. 7 ref. V. A. Frost.

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- 136 -

Acc. Nr.: APO029431

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 9-14

PRODUCTION OF A NEW HEPTAENIC NONAROMATIC ANTIBIOTIC TBILIMYCIN  
BY ACT. CHARTREUSIS VAR. TBILISUS

Yu. D. Sherin, E. N. Sokolova, Yu. Ye Konev

Leningrad Institute for Antibiotics

A new variant designated as Act. chartreusis var. tbilisus, producing along with shartresin a new antifungal heptaenic antibiotic of the nonaromatic group is described. The new antibiotic is named as tbilimycin.

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UDC 576.858.13.095.383

BEKTEMIROV, T. A., ~~SHENKMAN, I. S.~~ and MARENNIKOVA, S. S., Chair of Virology,  
Central Institute of Advanced Training of Physicians and Moscow Scientific  
Research Institute of Viral Preparations

"Induction of Interferon by Vaccinia Virus Strains Differing in Pathogenicity"

Moscow, Voprosy Virusologii, No 5, 1971, pp 555-560

Abstract: Experiments on rabbits and mice revealed an inverse relationship between the amount of interferon induced by intracerebral injection of various vaccinia virus strains (EM-63, B-51, L-IVP, white clone of the Tashkent strain) and their pathogenicity. The strains of low pathogenicity (EM-63 and B-51) induced more interferon and did so earlier than the pathogenic strains (L-IVP and Tashkent). However, intravenous injection of mice with the different virus strains resulted in the Tashkent strain inducing the largest amount of interferon. The amount of virus in the brains of mice and skin of rabbits decreased just when the interferon concentration was highest for the particular strain. In vitro tests showed the Tashkent strain to be the least sensitive to interferon. The other three strains were less resistant to the inhibiting effect of interferon.

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USSR

UDC: 621.385.632

5  
VISKOV, N. N., LYAMICHEVA, S. I., SHENOGIN, A. A.

"A Traveling Wave Tube"

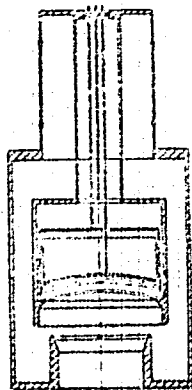
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 266076, filed 6 Nov 67, pp 59-70

Abstract: This author's certificate introduces a traveling wave tube which contains a metal shield inside which a spiral deceleration system is located, and elements for high-frequency coupling to waveguides made in the form of conductor segments situated at an angle of  $90^\circ$  to the axis of the system. As a distinguishing feature of the patent, the operating stability of the tube is improved when the dimensions of the space of interaction between the electron stream and the electromagnetic wave was reduced. The holders of the helical deceleration system, which has an elliptical cross section, are arranged along the narrow parts of the cross section of the helix and are made in the form of two metal covers which restrict the size of the interaction space from opposite sides, and are covered with a layer of dielectric material such as glass-ceramic or glaze on the surfaces in contact with the helix.

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USSR

VISKOV, N. N., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye  
Znaki, No 11, 1970



2/2

- 329 -



Devices

USSR

UDC: 621.385.63:621.391.883.22

SHENOGIN, A. A.

"Noise Factor Reduction in an 8-MM Range TWT"

Moscow, Radiotekhnika i Elektronika, No. 5, 1970, pp 1022-1026

Abstract: Experiments are described to investigate factors in travelling wave tubes operating in the millimeter wavelengths that escape consideration in theoretical works. For these experiments, a TWT of the classical type with a circular spiral delay system and a five-electrode gun was used. The nodal points of the tube were designed such that the electrical potential in the gun could be changed in wide limits at the beam axis, and that changes could also be made in the drift space length, the delay system characteristics and parameters, the current density of the electron beam, and in the size and distribution of the magnetic focusing field. To measure the instrument parameters of noise factor and gain,

USSR

SHENOGIN, A. A., Radiotekhnika i Elektronika, No. 5, 1970, pp 1022-1026

the normalized method was used with a type A.659.12 measurement receiver and a GSh-6 noise oscillator. The measurement error of the noise factor did not exceed  $\pm 1$  dB with a relative error of  $\pm 0.5$  dB. The author concludes that, to provide a TWT operating in the eight millimeter wavelength range with a noise factor of the order of 8 dB at a current density of at least  $0.5-0.8$  a/cm<sup>2</sup>, a magnetic focusing field in the cathode plane with an intensity of about 2000 oersteds is required. With the electrical mode of the TWT unchanged, the minimum value of 8dB for the noise factor can be obtained in a frequency band of more than 5-7%. In a broader band (up to 15%) with no change in the electrical regime, the noise factor did not exceed 10 dB. The author expresses his gratitude to M. P. Afanas'yeva, V. L. Demina, Ye. A. Leonov, S. I. Lyamicheva, Ye. V. Novikova, and Yu. V. Sokhov for their participation in the work of preparing and measuring the instruments.

2/2

- 40 -

1/2 043 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--REDUCTION OF THE NOISE FACTOR OF A TWT IN THE 8 MILLIMETER BAND -U-  
AUTHOR--SHENOGIN, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, MAY 1970, P. 1022-1026  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--ELECTROMAGNETIC NOISE, TRAVELING WAVE TUBE, ELECTRON SUN,  
ELECTRON BEAM, ELECTRON OPTICS, NOISE REDUCTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/1184 STEP NO--UR/0109/70/015/000/1022/1026  
CIRC ACCESSION NO--AP0124838  
UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124838

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL STUDY OF THE MINIMUM NOISE LEVEL REALISTICALLY ATTAINABLE IN THE 8 MM BAND FOR A CLASSICAL TWT WITH A CIRCULAR SPIRAL SLOW WAVE STRUCTURE AND A FIVE ELECTRODE GUN. THE DESIGN FEATURES OF THE TUBE WERE SUCH AS TO ALLOW WIDE RANGE CHANGES OF (1) THE ELECTRIC POTENTIAL DISTRIBUTION AT THE BEAM AXIS IN THE GUN, (2) THE DRIFT SPACE LENGTH, (3) THE SLOW WAVE STRUCTURE PARAMETERS, (4) THE ELECTRON BEAM SHAPE, DIAMETER, AND FLUX DENSITY, AND (5) THE FOCUSING FIELD STRENGTH AND CONFIGURATION.

USSR

UDC 621.385.632

SHENCSIN, A.A.

"On The Miniaturization Of The Elements Of A Type-C TWT With An Increase Of Deceleration"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 9, pp 16-22 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A175)

Translation: A method is considered for miniaturization of a low-power Type-C traveling-wave tube with a unidirectional magnetic focusing field, with use of extremely large values of deceleration of the waveguiding structure. Relations are derived for evaluation of the advantage in the weight of the amplifiers. Some technical possibilities are considered for production of a decelerating system with large deceleration. 9 ref. Summary.

1/1

USSR

UDC 621.385.632(088.8)

VISKOV, N.N., LYAMICHEVA, S.I., SHENOGIN, A.A.

"Traveling-Wave Tube"

USSR Author's Certificate No 266076, filed 6 Nov 67, published 6 July 70 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A108F)

Translation: A TWT is proposed which contains a metal screen inside of which is located a spiral delaying system and elements for high-frequency connection with waveguides, made in the form of conductor sections located at a 90° angle to the system axis. With the object of increasing the stability of operation of the tube with reduced dimensions of the area of interaction of the electron stream with the electromagnetic wave, supports for the spiral delaying system which have an oval cross section are positioned along the narrow parts of the spiral cross section and are made in the form of two metal covers, bounding from opposite sides the extent of the area of interaction and covered on the contact surfaces along with the spiral by a layer of dielectric material, e.g., pyroceramic or glaze.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--CROSSLINKED COPOLYMERS -U-  
AUTHOR--(02)-SHENTAROVICH, P.S., LARIONOVA, V.D.  
COUNTRY OF INFO--USSR  
SOURCE--USSR 202,520  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--04FEB70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYMER CROSSLINKING, COPOLYMER, CHEMICAL PATENT, STYRENE,  
MALEIC ANHYDRIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/1451 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0128850  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0128850

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INSOL. CROSSLINKED COPOLYMERS THAT  
SWELL IN WATER WERE PREPD. BY TREATING A STYRENE MALEIC ANHYDRIDE  
COPOLYMER WITH A CROSSLINKING AGENT, SUCH AS AN ALKALI METAL GLYCOLATE.  
FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES,  
USSR.

UNCLASSIFIED



USSR

UDC: 597.0/5-15

SHENTYAKOVA, L.F., SHENTYAKOV, V.A., STEPANOV, V.S., SMIRNOVA, N.F., KUZMINA, V.V., BARONKIN, O.F., BAYEVA, G.D., ZAYTSEVA, K.N., Institute of Biology of Inland Waters Academy of Sciences, USSR

"The Effect of Alternating Current on Fish and Aquatic Invertebrates"

Moscow, Voprosy Ikhtiologii (Problems of Ichthyology) Vol 10, No 3, 70, pp 506-518

Abstract: This study on the influence of alternating currents on fish in various stages of life and development, in many different inland waters, covers a period of several years, and includes a great variety of fish. Trawl fishing with alternating current, the effect of current on spawning, embryo, larvae and fry and the subsequent condition of varieties of fish and their reproductive capacity, were studied. Results (summarized in five tables and a graph) show that alternating current in doses causing electronarcosis does not harm any fish in any phase of life and that from spawn to adult, fish develop normally. The catch of fish by alternating-current trawl is 125-263% above the normal. Studies on zooplankton and benthos showed that some organisms are not affected by low current intensities. Current of higher intensity stirred the little animals to a greater activity, and still higher induced electro-narcosis. Plankton and benthos revive rapidly after withdrawal of current. Only in current doses 15-126 times that necessary to induce narcosis does death occur with about 10% of the plankton and benthos surviving.

USSR

UDC: 597.0/5-15

S  
SHEPTYAKOVA, L.F., SHEPTYAKOV, V.A., STEPANOV, V.S., SMIRNOVA, N.F., KUZMINA, V.V., BARONKIN, O.F., BAYEVA, G.D., ZAYTSEVA, K.N., Institute of Biology of Inland Waters Academy of Sciences, USSR

"The Effect of Alternating Current on Fish and Aquatic Invertebrates"

Moscow, Voprosy Ikhtiologiiya (Problems of Ichthyology) Vol 10, No 3, 70, pp 506-518

Abstract: This study on the influence of alternating currents on fish in various stages of life and development, in many different inland waters, covers a period of several years, and includes a great variety of fish. Trawl fishing with alternating current, the effect of current on spawning, embryo, larvae and fry and the subsequent condition of varieties of fish and their reproductive capacity, were studied. Results (summarized in five tables and a graph) show that alternating current in doses causing electronarcosis does not harm any fish in any phase of life and that from spawn to adult, fish develop normally. The catch of fish by alternating-current trawl is 125-263% above the normal. Studies on zooplankton and benthos showed that some organisms are not affected by low current intensities. Current of higher intensity stirred the little animals to a greater activity, and still higher induced electro-narcosis. Plankton and benthos revive rapidly after withdrawal of current. Only in current doses 15-126 times that necessary to induce narcosis does death occur with about 10% of the plankton and benthos surviving.

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585 59068  
6.73

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SHENYAVSKAYA, L.A.

1-1. PHOTOGRAPHY ON THE SURFACE OF SINGLE GERMANIUM AND SILICON CRYSTALS  
Article by G. I. Dvornik, L. A. Shenyavskaya, Moscow: Sovetskoye Radio, 1972, p. 91

A study was made of the effect of light in the region of characteristic absorption of single germanium and silicon crystals on the crystallization process taking place on their surfaces. The p and n-type crystals were cut out along the (100) and (111) planes and they were treated by polishing, etching and also in the dark after preliminary illumination in the dark. With 11-12% negative charged as a result of etching [1]. The illumination of the surface of the unilluminated specimens, biaxial textures of anthracene in the form of a uniaxial texture, that is, the surface is recharged and becomes positively charged [1]. Changing the sign of the surface charge during illumination is connected with the occurrence of nonequilibrium charge carriers acting with the active centers existing on the semiconductor-oxide interface since oxide films on the surface of Ge and Si do not absorb radiation in the spectral interval used. When staining previously illuminated specimens in the dark, uniaxial textures of the anthracene crystals are formed as before, and this memory effect is retained about fifteen minutes. Epitaxy actually takes place on the outside of the amorphous oxide films, that is, by the long-acting mechanism [2]. In the oxide films, information linear polarization microstructures occur (by which, probably, information linear polarization microstructures arise to epitaxy). The recharging of the centers at the semiconductor-oxide interface takes place in microseconds, and it can not be connected with the long-term memory of the specimens. The polarization microstructures slowly change under the external effects, and this explains the crystal memory during photo-epitaxy.

# BIBLIOGRAPHY

1. G. A. Kobzareva, G. I. Dvornik, V. P. Konstantinov, Kristallografiya (Crystallography), No 13, 510, 1970.
2. G. I. Dvornik, DAN SSSR (Reports of the USSR Academy of Sciences), Vol 199, 802, 1971.

USSR

DISTLER, G. I.; SHENYAVSKAYA, L. A. (Institute of Crystallography, USSR Academy of Sciences, Moscow)

"Semiconductor Crystal Memory under Photoepitaxy"

Leningrad, Fizika Tverdogo Tela; May, 1972; pp 1400-5

ABSTRACT: In an optical microscope, by a method of coating by anthraquinone, the authors studied the electrical contour of the surface of single crystals of germanium and silicon and its variation occurring as a result of the illumination of the crystals in the area of their fundamental absorption. The samples were cut along the (100) and (111) planes and were etched and polished. The crystals were coated in darkness, during illumination, and also after preliminary illumination. On the (100) plane of the unilluminated samples a biaxial texture of the anthraquinone crystals appeared; and on the (111), a triaxial texture -- i.e., the surface is negatively charged as a result of the etching. A uniaxial texture was formed on the illuminated portions, indicating an overcharge of those portions which become positively charged. A change of sign of the charge of the surface is related to the occurrence, during illumination, of nonequilibrium carriers interacting with active centers existing on

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USSR

DISTLER, G. I. and SHENYAVSKAYA, L. A., Fizika Tverdogo Tela; May 1972, pp 1400-5

the boundary of a semiconductor oxide with so-called fast states. The memory effect of the surfaces of germanium and silicon during photoepitaxy, when uniaxial textures are formed in darkness, lasts for a period on the order of 15 minutes. The memory effect found in the semiconductors is explained by the fact that epitaxy actually occurs on the outside of the oxide films in which, under the effect of the centers -- fast states, local linear polarization structures occur. These structures (slow states) after overcharge of the surface centers -- fast states -- change slowly, which fact also explains the long memory of crystals of germanium and silicon during photoepitaxy.

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USSR

UDC 539.89 +  
532.78

BERTMAN, A. A., YEPANCHINTSEV, O. G., Academician SAMARIN, A. M. (deceased),  
CHERPOV, D. B. and SHENYAYEV, A. Ya., Institute of Metallurgy imeni A. A. Baykov,  
Academy of Sciences USSR

"Structure and Properties of Cast Iron Crystallized under High Pressure"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR),  
Vol. 195, No. 1, p 67-70, 1970

Abstract: Experiments have shown that pressures of the order of 1000 atmospheres applied to melts during cooling markedly affect crystallization of metal and improves its structure. This is especially true for alloys, including cast iron, having so-called colloidal microinhomogeneities. The structure and properties of cast iron melted and crystallized under pressures of 3 to 30 kbar are studied. Barothermic tests were made on gray cast iron having the eutectic composition of 3.8% C, 2% Si, 0.3% Mn, 0.25% S, and 0.15% P. The sample was heated to 1200°C under 30 kbar pressure. The test pressure was applied by a 200-ton press and was reached in 3 minutes, whereupon the sample was heated. The sample melted at approximately 1190°C and was held at 1200°C for 1 to 2 minutes. Then the sample was cooled slowly (~3 deg/sec) or rapidly (~200 deg/sec) to room temperature.

USSR

BERTMAN, A. A., et al, Doklady Akademii Nauk SSSR, Vol. 195, No. 1, pp 67-70, 1970

Pressure was then removed. The initial structure of the samples was perlitic, with branching inclusions of graphite. After barothermic processing, the graphite inclusions disappeared. Slowly-cooled samples exhibited a structure typical of pre-eutectic white cast iron with primary austenitic dendrites and ledeburite. Elevated pressure noticeably increases the quantity of austenite and produces a fine structure. Metallographic analysis showed a dark component at the boundaries of the austenite dendrites and fine inclusions of a light phase. The dark phase was enriched with Si; and the light, with Mn. Both contained carbon. The structure of the fast-cooled sample resembled tempered steel and had dark needle-like components reminiscent of martensite. The hardness of the slowly-cooled samples increased by a factor of almost 3 as compared to the original metal, and wear resistance increased sharply. Orig. art. has 8 refs.

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- 146 -

USSR

UDC 512.25/.26+519.3:330.115

SHEPAKIN, M. B.

"Multistage Stochastic Problem of Mixtures"

Mat. Metody Issled. i Optimiz. Sistem. Vyp. 4 [Mathematical Methods of Investigation and Optimization of Systems, No 4 -- Collection of Works], Kiev, 1970, pp 3-15, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V534).

NO ABSTRACT.



USSR

UDC 658.51-52:62.503.55

SHEPAROV, V. I.

"Model of Programmed Control of the Industrial Process"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 3, May-Jun 71, pp 4-6

Abstract: Automating the control of technological and auxiliary operations is a further improvement in the level of industrial organization. The sequence of events taking place one after the other can be described by certain mathematical models. Continuous and discrete probability distributions can be investigated jointly if the probability of each event is represented as a Lebesgue-Stieltjes integral. For a continuous distribution the Lebesgue-Stieltjes integral is reduced to a Riemann integral and for the discrete distribution the function  $F(x)$  is reduced to the sum  $\sum_{a \leq x < b} P(x)$ . For

automatic inspection of the elements it may be assumed that the flow of events is determined and the flow of determined events corresponds to the definition and properties of the Stieltjes integral. The program can be divided into a series of synchronized subprograms in order to reduce the program's duration. The author finds that the area of application for the

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USSR

SHEPAROV, V. I., Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 3,  
May-Jun 71, pp 4-6

mode of compulsory preventative maintenance can be expanded if the structural  
schematic of control and direction of the industrial process is simplified.  
The article contains 1 illustration, 2 tables, and 3 bibliographic entries.

2/2

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USSR

UDC 619:616.981.51-036.21

BONDARENKO, G. F., POGREBANYAK, L. I., DUBROVIN, Ye. I., KHARCHUK, A. N., and SHEPCHENKO, V. U., Ukrainian Scientific Research Institute of Experimental Veterinary Science

"Some Problems of the Epizootiology of Anthrax"

Moscow, Veterinariya, No 6, Jun 73, pp 48-50

Abstract: In the period 1949-1970, the number of outbreaks of anthrax of farm animals, the incidence of anthrax among these animals, and the mortality rate of animals from anthrax decreased in the UkrSSR by factors of 11.1, 12.8, and 11.5, respectively. The incidence of anthrax of cattle increased from 57.2 to 73.8%, with the cattle owned by the population being affected to the principal extent, while that of sheep and goats decreased. Anthrax of hogs increased. The number of outbreaks of the disease and of the animals affected by it during the period under consideration were highest in the forest-steppe zone of the UkrSSR, being followed by the Steppe, Carpathian mountains and foothills, and forest zone, in that order. Of all identified stationary points unsatisfactory from the sanitary standpoint with respect to anthrax, 77.7% have been inactive for more than 11 yrs.

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USSR

BONDARENKO, G. F., et al., Veterinariya, No 6, Jun 73, pp 48-50

The number of such points that were newly recorded decreased vs. 1946 by a factor of 25.7 on the average in 1966-1970 and by a factor of 40 in 1970. One of the conditions that contributes to the persistence of outbreaks is the presence of Bac. anthracis in the soil at locations of old cattle burying grounds. Research is being conducted on the isolation from infected soil of actinomycetes with a heightened antibacterial activity towards Bac. anthracis with the view of applying these actinomycetes for the decontamination of cattle burying grounds.

2/2

USSR

UDC 629.735.33.063.7:539.622:622.75

AKSENOV, A. F., LITVINOV, A. A., KOROLENKO, YU. I., BORODIN, A. YE., and SHEPEL', A. YA., Kiev Institute of Civil Aviation Engineers

"Role of Physical and Chemical Processes in the Failure of Rolling Friction Surfaces in Low-Molecular Hydrocarbon Media"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 9, No 2, 1973, pp 25-29

Abstract: Studies were conducted to test the effect of different jet fuels on rolling friction surfaces using ShKh15 steel as the test material. Fuels used were commercial T-7, deoxygenated, and T-7 + 0.025% (by weight) Akor-1. Special attention was given to determining the effect of molecular oxygen and surface-active substances on wear. Test parameters consisted of a maximum stress of 230 kg/mm<sup>2</sup>,  $n = 850$  rpm, and load time equal to  $2 \times 10^5$  cycles; test temperature ranged from 20 to 120°C. Data plotted from test results showed that wear increases steadily using fuel T-7, reaching a maximum around 60°C and then drops rapidly and levels off at 120°C to less than 0.001 mm of wear. Wear was constant for the deoxygenated fuel and T-7 with Akor-1 added, being less than 0.005 mm. It was established that the anti-friction properties of fuels depend on the intensity and nature of occurrence of physical and chemical processes in the friction zone with the mandatory participation of

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USSR

AKSENOV, A. F., et al, Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 9,  
No 2, 1973, pp 25-29

oxygen. The lubricating action of surface-active substances is considerably greater if the metal is coated with an oxide. Minimum wear is observed when oxygen content in the fuel is maximum. 2 figures, 14 bibliographic references.

2/2

- 72 -

1/2 020 UNCLASSIFIED PROCESSING DATE--300CT70  
TITLE--CONFORMATION OF GRAMICIDIN S AND ITS N, N PRIME DIACETYL DERIVATIVE  
IN SOLUTIONS -U-  
AUTHOR--(05)-OVCHINNIKOV, YU.A., IVANOV, V.T., BYSTROV, V.F., MIROSHNIKOV,  
A.I., SHEPEL, E.N.  
COUNTRY OF INFO--USSR  
SOURCE--BIOCHEM. BIOPHYS. RES. COMMUN. 1970, 39(2), 217-25  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ANTIBIOTIC, MOLECULAR STRUCTURE, IR SPECTRUM, PROTON  
RESONANCE/(U)GRAMICIDIN S ANTIBIOTIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--3001/0939 STEP NO--US/0000/70/039/002/0217/0225  
CIRC ACCESSION NO--AP0126598  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126598

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE CONFORMATION OF GRAMICIDIN S (I) AND N, N PRIME DIACETYLGRAMICIDIN S (II) WAS STUDIED BY ORD, PMR, AND QUANT. IR METHODS USING SEVERAL DIFFERENT SOLVENTS. THE DATA OBTAINED PROVIDE PROOF OF THE HODGKIN OUGHTON-SCHWYZER BETA PLEATED SHEET TYPE MODEL, FOR WHICH PHI AND PSI COORDINATES ARE GIVEN. I AND II LACK AN INTERNAL CAVITY CAPABLE OF ACCOMMODATING METAL CATIONS, AND ARE UNABLE TO FORM COMPLEXES WITH METAL CATIONS. FACILITY: INST. CHEM. NATUR. PROD., MOSCOW, USSR.

UNCLASSIFIED



2/2 SHEPEL', V.

SO: FOREIGN PRESS  
DIGEST

FPD 0022/91

31 AUG 71

Philosophical  
Sciences

54. USSR

SHEPEL', V., Candidate of Philosophical Sciences

"The Psychology of Control"

Moscow, Nauchno-Tekhnicheskoye Obshchestvo SSSR, No 2, 1971, pp 18-20

Abstract: Several examples are given of situations in which the psychology of workers has had a significant influence on the results of production. Examples are given of workers with problem situations at home, in which supervisors must take the home situation into consideration in deciding how to deal with the problem at the plant. The significance of "unofficial leaders" in production teams and of the general psychological attitudes of the workers in determining the results of production is emphasized.

1/1

SHEPEL, V.

Penny

JPRS 54438

10 November 1971

PSYCHOLOGY OF CONTROL

[Article by V. Shepel, Candidate of Philosophical Sciences; Moscow, Nauchno-Tekhnicheskoye Obshchestvo SSSR, Russian, No 2, 1971, pp 18-20]

Who doubts the fact that there is a direct relation between the human mood and his productivity of labor?

It is not necessary to perform special research to confirm this. Every one knows it well: no work is good in a depressed state. On the contrary, in the case of happy perception of the surroundings, the human works easier and better and many vital facts are perceived more clearly. Thus, the better the psychological mood of man, the higher the economic and moral effect of actual labor. Achievement of this is one of the main goals of production control.

It is always complicated to lead people. It is no accident that many specialists who are qualified for organizational work proceed unwillingly.

Knowing how to "get through" to people, sensitively to capture their inner state, extract their ideas and goals, combine them into a working, suitable collective — all of this is of primary importance in the practice of administration by a modern leader. Otherwise, it is impossible for him to make valid decisions and select the most correct paths and methods of implementing them.

The following case occurred somehow at one of the enterprises. In one of the assembly shops, a female worker spontaneously went home before the end of her shift. This is a gross violation of labor discipline. However, as it turned out, her direct supervisor — the foreman — was at fault.

This woman's child had become ill. She had not filled out a notice before the end of the shift she simply became beside herself. Two hours before the end of the shift she simply became beside herself. The foreman came along the line, and she turned to him: "Permit me to leave now?" But she gave no reason.

Philosophical  
Sci.

- 1 -

[I - USSR - C]

USSR

UDC: 550.834

SHEPELENKO, E. P., LINCHEVSKIY, D. F., Krasnodar Affiliate of the All-Union Scientific Research Institute of Geophysical Prospecting Methods  
"A Seismic Prospecting Method"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, Nov 71, Author's Certificate No 318002, Division G, filed 25 Feb 70, published 19 Oct 71, p 173

Translation: This Author's Certificate introduces a seismic prospecting method based on using a vibrator to excite oscillations of linearly varying frequency in the ground. As a distinguishing feature of the patent, the effectiveness of processing the recording is improved by separate recording of the signals received by a seismic receiver set up near the vibrator and by one set up at a distance. The signals are recorded in the form of segments which are added on a single registration unit throughout the entire operating period of the vibrator. The signal from the remote seismic receiver is amplified and multiplied with the signal from the receiver set up close to the vibrator. After low-frequency filtration and differentiation, the signal is again multiplied with that from the

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USSR

UDC: 681.327

SHEPELENKO, K. O., Scientific Research Institute of the Construction Industry, Office of State Construction of the UkrSSR

"A Storage Element"

USSR Author's Certificate No 332563, filed 5 May 70, published 19 Apr 72  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan 73, abstract No 1B432 P)

Translation: When the number of storage cells is large, a memory unit made up of such elements becomes rather complicated and expensive. Besides, a special signal (reset to "zero") is required in known threshold potential storage elements to ensure a strictly determined state of the element after actuation of the supply voltage, leading to additional complication of the device.

Known storage elements like flip-flops coupled by logic elements of the Pierce function type (NOR) and others contain transistorized stages coupled by deep (sic) positive feedback. A disadvantage of the conventional elements is that several transistors with resistors, capacitors and diodes are used in each element.

The purpose of this invention is to simplify the construction of threshold

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USSR

SHEPELENKO, K. O., USSR Author's Certificate No 332563

storage elements, reduce their cost, and obviate the need for shaping an initial reset signal when the voltage is actuated.

This goal is achieved by using a single transistor as the proposed storage element, with a common emitter circuit and a load resistor in the collector circuit. Cadence pulses which charge a storage capacitor are fed through this capacitor and a diode to the base circuit of the transistor, which is biased in the forward direction in the initial state. Feedback voltage from the output of the potential storage element is fed to the diode through a resistor.

2/2

- 37 -

USSR

UDC: 621.373.544

SHEPELENKO, K. O., Scientific Research Institute of the Construction Industry

"Memory Element"

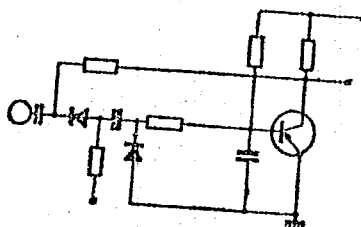
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332563, Division H, filed 25 May 70, published 14 Mar 72, p 222

Translation: This Author's Certificate introduces a memory element which contains a cadence pulse generator connected to one plate of an isolating capacitor. The element also contains a normally open switching transistor and a power supply. As a distinguishing feature of the patent, in order to simplify the design and to set the element to the initial state when the power supply is actuated, a normally closed diode and a storage capacitor are connected between the other plate of the isolating capacitor and the base of the transistor. The tiepoint between the isolating capacitor and the diode is connected through a resistor to the collector circuit of the transistor.

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USSR

SHEPELENKO, K. O., USSR Author's Certificate No 332563



2/2

- 34 -

USSR

UDC 612.58+612.015.32

ALIMOVA, Ye. K., MAKSIMENKO, V. A., and SHEPELEV, A. P., Chair of Biochemistry, Medical Institute, Rostov-na-Donu

"Changes in Lipid Metabolism at Various Stages of Acute Experimental Hypothermia"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 5, 1973, pp 814-818

Abstract: In unanesthetized dogs whose body temperature is lowered at a rate of 2-2.5°C/hr by application of ice packs, the initial response (prior to fall in body temperature) consists of an increase in total lipids and nonesterified fatty acids (NEFA) in arterial blood; a rise in total cholesterol in the liver and a fall in the lungs and skeletal muscles; and a fall in lipid phosphorus in the liver and skeletal muscles. Reduction of body temperature by 8-10°C causes a further increase in NEFA in arterial blood and a partial return of total lipids to the control value. Total cholesterol becomes normal in the liver and lungs, while lipid phosphorus increases in the lungs and decreases in skeletal muscles. When body temperature is reduced by 18-20°C (agonal period), total cholesterol increases in the liver and lungs, NEFA concentration decreases (relative to the preceding level) in the liver and lungs and increases in skeletal muscles, while lipid phosphorus decreases everywhere. The intensified



USSR

ALIMOVA, Ye. K., et al., Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov,  
Vol 59, No 5, 1973, pp 814-818

oxidation of NEFA in skeletal muscles is interpreted as a compensatory process  
tending to increase heat production in the cooled body, while the altered lipid  
metabolism in the lungs probably reflects accelerated production of the alveo-  
lar surfactant which reduces water diffusion and heat loss due to evaporation.

2/2

- 40 -

USSR

UDC 612.015.32

ALIMOVA, Ye. K., KIRYUKOVA, and ~~SHEPELEV~~ A. P., Biochemistry Department,  
Rostov-on-Don Medical Institute

"Dynamics of Some Indexes of Lipid Metabolism After Acute Hyperthermia"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 8, 1971, pp 1,188-1,191

Abstract: Elevating the body temperature of dogs by 1° slightly increased the content of total lipids, nonesterified fatty acids (NFA), lipid phosphorus, and free and esterified cholesterol in the lungs and amount of NFA in the liver. A 5-6° elevation of temperature, which proved to be lethal, further increased the content of NFA and lipid phosphorus in the lungs while lowering total lipids and total cholesterol. All the indexes of lipid metabolism decreased in the liver. After the rectal temperature was raised 2 to 3° and hyperthermia halted, all the indexes in the liver returned to normal except NFA, which continued to increase. Meanwhile the amount of NFA in the lungs dropped to the original level while the content of total lipids, lipid phosphorus, and free and esterified cholesterol increased. The authors believe the edema of the lungs and brain, change in permeability of the blood-brain barrier, lysis of erythrocytes, and hemorrhages observed in overheated animals may be due to increased permeability resulting from structural changes in the lipids of the cell membranes.

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USSR

SMORODINSKIY, Ya. A., and SHEPELEV, G. I.

"Boost Matrix Elements in  $O(3,1)$  and Continuation to  $O(4)$ "

Moscow, Yadernaya Fizika, Vol 13, No 2, 1971, pp 441-453

Abstract: Friedman and Wong (Phys. Rev., 160, 1560, 1967) have found a formula for the matrix of finite rotation of the group  $O(4)$  in the form of a Fourier series with coefficients equal to the product of the Clebsh-Gordan coefficients. This indicated to the authors that expressions in the form of double sums produced for Lorentz groups might also be reduced to a form similar to the Friedman-Wong formula. The angular momenta in this case are continued into the complex area, and the Fourier series is replaced by a Fourier integral. Since the expansion of the amplitudes of scattering by matrix elements of the  $O(3,1)$  and  $O(4)$  representations can be continued in each other, these groups are looked upon as groups of symmetry of the scattering amplitude. Proof of the continuation of the matrix elements in each other is given. An expression is also presented for the transformation of spinors with hyperbolic rotation.

1/1

1/2 019  
TITLE--TEMPERATURE FIELD IN LOCAL HEATING OF SHEET BARS BY A NARROW,  
SINGLE BAND INDUCTOR -U-  
AUTHOR--SHEPELEV, I.N. S  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, NO. 2, 1970, PP  
33-34  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--METAL HEAT TREATMENT, MODEL, METAL PIPE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1985/0270  
STEP NO--UR/0182/70/000/002/0033/0034  
CIRC ACCESSION NO--AP0100777  
UNCLASSIFIED

2/2 019

CIRC ACCESSION NO--AP0100777  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. INDUCTION HEATING IS USED TO INTENSIFY THE FORMING PROCESS OF STIFF METAL SHEETING (TITANIUM ALLOYS, FOR EXAMPLE) FOR MAKING CIRCULAR PIPING AND PARTS. THIS PAPER PRESENTS SOME NOTES ON THE DESIGN OF THE TECHNOLOGICAL PROCESSES AND THE DETERMINATION OF SOME STRUCTURAL PARAMETERS OF THE HEATING DEVICE REQUIRED TO DETERMINE THE OPERATION MODE OF THE INDUCTION HEATER AND THE ROTATIONAL SPEED OF THE PIPING WHICH WILL PROVIDE THE REQUIRED FIELD TEMPERATURE FOR THE FORMING PROCESS. THE MODEL THE AUTHOR USES FOR HIS CALCULATIONS CONSISTS OF A LONG STRIP HEATED BY A NARROW INDUCTOR; IT IS ASSUMED THAT THE SMALL AREA UNDER THE INDUCTOR RECEIVES THE ENERGY PROPAGATED AT SOME VELOCITY OVER THE TRANSVERSE CROSS SECTION OF THE INDUCTOR. HE OBTAINS AN EQUATION FOR THE TEMPERATURE AS A FUNCTION OF A SINGLE DIMENSION AND THE TIME, WHICH SHOWS THE TEMPERATURE DISTRIBUTION OVER THE BAND CROSS SECTION FROM THE MOMENT OF INITIAL HEATING TO THE END OF THE FORMING PROCESS, WITH CONVECTIVE HEAT EMISSION TAKEN INTO ACCOUNT. THIS FORMULA PERMITS COMPUTING THE TEMPERATURE FIELD DISTRIBUTION IN THE BAND CROSS SECTION AT THE OUTPUT OF THE INDUCTOR. THE ARTICLE PRESENTS A CURVE COMPARING THE TEMPERATURE FIELD OBTAINED FROM THE FORMULA WITH THAT OBTAINED EXPERIMENTALLY. THE FEW POINTS OF DISAGREEMENT BETWEEN THE TWO DERIVE FROM THE ASSUMPTION THAT THE HEAT ENTERS SOME ELEMENTAL LENGTH, WHEREAS IN PRACTICE THIS LENGTH IS ABOUT 25PERCENT OF THE TOTAL LENGTH OVER WHICH THE TEMPERATURE IS MEASURED.

UNCLASSIFIED

USSR

UDC 533.916

LUTSENKO, Ye. I., FAYNBERG, Ya. B., VASIL'CHUK, V. A., and SHEPELEV, N. P.

"Interaction of an Intense Electron Beam With Uniform and Nonuniform Plasmas"

Kiev, Fizika Plasmy i Problemy Upravlyayemogo Termoyadernogo Sinteza (Plasma Physics and Problems in Controlled Thermonuclear Synthesis -- collection of works) No 3, "Naukova dumka," 1972, pp 5-15

Abstract: Since the method of obtaining intense electron beams by accelerating plasma electrons with an external magnetic field is a difficult one, the authors have investigated the problem of obtaining such a beam in plasmas which are uniform or nonuniform along their lengths, and they have developed a device for attaining that aim. A diagram of the device and a description of its component parts are given, together with details of its calibration. Experiments were performed with it for both uniform and nonuniform plasmas; among their results are oscillograms of the plasma radiation and of the electron beam current at various voltages. The experiments showed that there is a limited amount of electron emission from the cold cathode, but this disappears at plasma concentrations of less than  $10^{12}/\text{cm}^3$ . The beam current attains a value of 1000 amp at a 40 kv level, although beams of much higher power can be obtained.

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USSR

UDC 533.916

LUTSENKO, Ye. I., FAYNBERG, Ya. B., VASIL'CHUK, V. A., SHEPELEV, N. P.

"Interaction of an Intense Electron Beam With a Homogeneous and Nonhomogeneous Plasma"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb.  
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion.  
Republic Interdepartmental Collection), 1972, No. 3, pp 5-15 (from  
RZh-Fizika, No 11, Nov 72, Abstract No 11G249)

Translation: The problem of producing an intense electron beam in a plasma at a density of  $10^{11} - 10^{13} \text{ cm}^{-3}$  by accelerating electrons in it with an external electric field of 500-1000 v/cm of 0.5 usec duration produced by an induction accelerator is investigated. An electron beam with a current above 1000 a and an energy close to the applied voltage was obtained with a particle concentration in the beam of  $n_1 \sim 10^{11} \text{ cm}^{-3}$ . The beam is produced in the precathode layer of plasma of thickness less than 2 cm, where the entire voltage applied to it is redistributed. As the beam passes through the plasma, about 1/3 of the beam current is lost as a result of beam instability with a frequency  $\omega_{pe}$ , and the energy spectrum of the electron is diffused. Stabilization of the instability is achieved by the application of a plasma that is nonhomogeneous along the length.

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- 51 -

1/2 018

UNCLASSIFIED  
TITLE--EFFECT OF THE PARAMAGNETISM OF CONJUGATED POLYMERS AND THEIR  
COMPLEXES ON NMR SPECTRA AND MACROMOLECULAR MOTION -U-  
AUTHOR--(05)--MAKLAKOV, A.I., SHEPELEV, V.I., GOLDGAMMER, K.A., ZGADZAY,  
E.A., TARASOV, B.G.  
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(2), 394-400

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--PARAMAGNETISM, CONJUGATED POLYMER, COMPLEX COMPOUND,  
MACROMOLECULE, SCHIFF BASE, PYRIDINE COMPLEX, ACETYLENE, ELECTRON SPIN,  
NMR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/0251

STEP NO--UR/0459/70/012/002/0394/0400

CIRC ACCESSION NO--AP0106907

UNCLASSIFIED



2/2 018

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0106907

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NMR SPECTRA WERE OBTAINED FOR  
POLY(SHIFF BASES) (I) CONTG. :CHCH:NRN: (R EQUALS PYRIDINEDIYL) GROUPS,  
I COMPLEXES WITH BR, POLY(PHENYLACETYLENE) (II), AND II COMPLEXES WITH  
IODINE AT 77-330DEGREES K. ELECTRON SPIN LATTICE RELAXATION TEMP.  
DEPENDENCE WAS OBSD. THE CONDITIONS WERE DETD. UNDER WHICH THE  
PARAMAGNETIC CENTERS PRESENT IN THESE POLYMERS MAY HAVE AN EFFECT ON THE  
2ND MDMENT OF NMR ABSORPTION LINES. AN ANOMALOUS EFFECT OF HALOGENS ON  
THE MOL. MOBILITY OF I AND II WAS OBSD.

UNCLASSIFIED

11/10/40400

SHEPELEV, V. I.

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3/70

236730 GLASS FIBRE MANUFACTURE. This invention relates to a device for charging glass beads automatically into a glass-melting pot, which incorporates a level-indicating gauge in the form of a d.c. amplifier, a controlled admission device and a time relay. To improve the safety and reliability of operation, the control unit on the admission device additionally includes an unsymmetrical multivibrator and the level gauge includes a Schmitt trigger. The electronic circuitry is shown in the diagram. The level gauge section of the circuit consists of the input rectifying bridge M and trigger 1; the control unit is made up of the unsymmetrical multivibrator 2, the relay is connected by the triode P<sub>1</sub> to the d.c. amplifier 3 and relay R<sub>1</sub> at the output. The way in which the circuit works when the level of the mass of glass in the furnace changes is described, together with the

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mechanism that comes into operation to add more  
glass beads to the furnace to replace that which  
has been used in production. 22.8.67. as 1182663/  
29-33. V.N DOKUCHAEV et al. (19.6.69.) Bul.7/  
3.2.69. Class 32a. Int.Cl. C03b.

AUTHORS: Dokuchayev, V. N.; Shepelev, V. L.; Kalynov, Yu. S. LD

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19741965

Public Health, Hygiene and Sanitation

USSR

UDC 621.373.826:57

KIRICHINSKIY, B. R., ~~SHEPPIEV, V. N.~~ MEDVEDOVSKAYA, TS. P., LYSINA, G. G.,  
LOGANOVSKIY, N. G., SOLETSKAYA, A. S., VOL'FOVSKAYA, R. KH.

"Effect of Laser Emission on the Organism of Industrial Workers"

V sb. Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch. 2-3  
(Utilization of Lasers in Modern Engineering and Medicine. Parts 2-3 -- collec-  
of works), Leningrad, 1971, pp 108-110 (from RZh-Radiotekhnika, No 1, 1972,  
Abstract No 1D651)

Translation: A report is presented on examination of 40 people working 3.4  
years on the average with laser emission (200-200 bursts per week with a pulse  
duration of 20-40 nanoseconds and an energy of 1-10 joules and up to 1 joule  
in the continuous mode). It was calculated that the radiation level on the  
cornea was  $5 \cdot 10^{-6}$ - $5 \cdot 10^{-7}$  joules, which is approximately 2 orders higher than  
the levels which the majority of authors recommend as the maximum allowable  
and approaches the threshold values (causing minimum damage to the retina).  
For people with low seniority, pronounced shifts in autonomic vascular  
regulation was often detected with some lowering of visual function and  
liability of composition of peripheral blood. This has the nature of func-  
tional-dynamic shifts.

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Acc. Nr:

AP0052079

Ref. Code: UR0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 2, pp 108-111

STATE OF THE NERVOUS SYSTEM IN PERSONS WORKING WITH SOURCES  
OF IONIZING RADIATION

V. N. Shepelev, (Kiev)

The state of the nervous system was studied in 448 staff workers of a scientific-research reactor and cyclotron. These persons were for a long time exerted to small doses of ionizing radiation. Results of this investigation revealed functional changes of the vegetative nervous system, visual and vestibular analysers and alterations in the peripheric blood picture and four clinical forms have been singled out: vegetative dysfunction, vegetative-vascular dystonia, astheno-vegetative and astheno-hypotensive syndromes. They are stages of a single process. This process may take a wave-like character and may be evaluated as a reflectory-adaptative one with widening of the limits of physiological norm.

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AN0012150

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B

AUTHOR-- V. A. YEFIMOV, CORRESPONDING MEMBER OF THE UKRAINIAN  
ACADEMY OF SCIENCES, DIRECTOR, THE INSTITUTE OF FOUNDING  
PROBLEMS /IFP/

NEWSPAPER-- PRAVDA UKRAINY, JANUARY 11, 1970, P 2, COLS 1-3

ABSTRACT-- THE AUTHOR DIRECTED A PROGRAM AT THE IFP, THE RESULT OF WHICH WAS A NEW HIGH-SPEED TEEMING OF 17-23 TON INGOTS OF THE OPEN-HEARTH STEEL. THE "CORRUGATED" INGOT WALLS PREVENT THE FORMATION OF CRACKS IN RIMMED STEEL INGOTS. THE NEW METHOD INCREASED THE POURING RATE BY A FACTOR OF 8-10 AND CUT THE TIME BY A FACTOR OF 2.5. THE NEW METHOD IS PRACTICED AT THE METALLURGICAL PLANT IMENI IL, ICH IN ZHDANOV AND THE CHEREPOVETS PLANT. CANDIDATE OF TECHNICAL SCIENCES V. N. SAPKO AND ENGINEER V. V. SHEPELEV PARTICIPATED IN THE RESEARCH PHASE OF THIS PROGRAM.

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AN0012150

THE INSTITUTE ALSO CONDUCTED RESEARCH INTO UNDER-SLAG POURING OF STEEL /ENGINEER V. P. OSIPOV, A DEPARTMENT HEAD, CANDIDATE OF TECHNICAL SCIENCES N. YA. YASHCHUK, ET. AL./ AND COLLABORATED WITH PATON, S INSTITUTE OF ELECTRIC WELDING IN DEVELOPING THE PRODUCTION TECHNOLOGY OF THIS PROCESS. AS A RESULT, THE PRODUCTION TIME HAS BEEN REDUCED TO ONE-TENTH, AND THE AMOUNT OF REJECTS BY A FACTOR OF 2-32, DEPENDING UPON THE GRADE OF STEEL.

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1/2 020  
UNCLASSIFIED  
PROCESSING DATE--30OCT70  
TITLE--CRYSTAL STRUCTURES OF THE RARE EARTH PYROSILICATES -U-  
AUTHOR--(02)--SMOLIN, YU.I., SHEPELEV, YU.F.  
COUNTRY OF INFO--USSR  
SOURCE--ACTA CRYSTALLOGR., SECT. B 1970, 26 (PT.5), 484-92  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--CRYSTAL STRUCTURE, SILICATE, RARE EARTH COMPOUND, X RAY  
DIFFRACTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1999/1056  
CIRC ACCESSION NO--AP0123049  
STEP NO--DE/0000/70/026/000/0484/0492  
UNCLASSIFIED



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020

CIRC ACCESSION NO--AP0123049  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. BY X RAY DIFFRACTION, 4 STRUCTURE TYPES OCCUR IN THE RARE EARTH PYROSILICATES. THEY HAVE THE FOLLOWING SYMMETRY: SILICATES OF SC, YB, TM, C2-M; SILICATES OF ER, HO, Y. P2 SUB1-B; SILICATES OF Y, HO, DY, GD, PNA2 SUB1, AND THE RARE EARTH SILICATES FROM EU TO LA, P2 SUB1 2 SUB1 2 SUB1. THE CRYSTAL STRUCTURES OF YB SUB2 SI SUB2 O SUB7 (A EQUALS 6.802, B EQUALS 8.875, C EQUALS 4.703 ANGSTROM, BETA EQUALS 102DEGREES 07PRIME, C2-M, Z EQUALS 2), ER SUB2 SI SUB2 O SUB7 (A EQUALS 4.683, B EQUALS 5.556, C EQUALS 10.79 ANGSTROM, GAMMA EQUALS 96DEGREES, P2 SUB1-B, Z EQUALS 2), GD SUB2 SI SUB2 O SUB7 (A EQUALS 13.87, B EQUALS 5.073, C EQUALS 8.33 ANGSTROM; PNA2 SUB1, Z EQUALS 4), HO SUB2 SI SUB2 O SUB7 (A EQUALS 5.394, B EQUALS 12.95, C EQUALS 8.72 ANGSTROM, P2 SUB1 2 SUB1 2 SUB1, Z EQUALS 4) HAVE BEEN DETD. AND REFINED BY A LEAST SQUARES METHOD WITH THE USE OF COMPLETE 3 DIMENSIONAL INTENSITY DATA. INTENSITIES WERE MEASURED ON A SINGLE CRYSTAL DIFFRACTOMETER WITH A SCINTILLATION COUNTER, USING MONOCHROMATIC MO K ALPHA RADIATION. THE FINAL R VALUES FOR THESE STRUCTURES WERE 0.054, 0.062, 0.073, AND 0.077, RESP. THE AT. COORDINATES, BOND LENGTHS, AND VALENCY ANGLES ARE GIVEN. THE SIMPLE PI BONDING THEORY IS INSUFFICIENT FOR DESCRIBING THE BOND ORDERS AND BOND LENGTHS IN THE SILICATE ANIONS OF THESE COMPOS. THE MAJOR FACTOR RESPONSIBLE FOR THE MAGNITUDE OF THESE VALUES APPEARS TO BE THE POLARIZATION EFFECT OF CATIONS.

LENINGRAD, USSR.

FACILITY: INST. SILICATE CHEM.,

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--CRYSTAL STRUCTURE OF A LOW TEMPERATURE FORM OF SAMARIUM  
PYROSILICATE SM SUB2 SI SUB2 O SUB7 -U-  
AUTHOR--(C3)-SMOLIN, YU.I., SHEPELEV, YU.F., BUTIKOVA, I.K.  
COUNTRY OF INFO--USSR  
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 256-61  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--CRYSTAL STRUCTURE, SAMARIUM COMPOUND, SINGLE CRYSTAL, CRYSTAL  
GROWING, SILICON COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/0898 STEP NO--UR/0070/70/015/002/0256/0261  
CIRC ACCESSION NO--AP0116408  
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0116408

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE STRUCTURE OF SM SUB2 SI SUB2 O SUB7 WAS DETD. FOR SINGLE CRYSTALS PREPD. BY CRYSTM. FROM A MELT IN A BI SUB2 O SUB3 SOLN. THE CRYSTALS HAVE TETRAGONAL SYMMETRY, SPACE GROUP P4 SUB1, AND THE LATTICE PARAMETERS ARE A 6.695 PLUS OR MINUS 0.005 AND C 24.40 PLUS OR MINUS 0.02 ANGSTROM. 1420 REFLECTIONS WERE MEASURED WITH A DIFFRACTOMETER WITH A SCINTILLATING COUNTER, AND THE STRUCTURE WAS REFINED BY THE LEAST SQUARES METHOD TO A VALUE OF R EQUALS 0.044. THE AT. COORDINATES AND THE INTERAT. DISTANCES ARE GIVEN, AND THE STRUCTURE IS DESCRIBED.

FACILITY: INST. KHIM. SILIKAT., LENINGRAD, USSR.

UNCLASSIFIED

173 012  
UNCLASSIFIED  
TITLE--PLANNING AN EXPERIMENT DURING A STUDY OF ADSORPTION FROM THREE  
COMPONENT SOLUTIONS -U-  
AUTHOR--(03)--RAKHLEVSKAYA, M.N., GRYAZEV, N.N., SHEPELEVA, L.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 491-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ADSORPTION, PROPIONIC ACID, STEARIC ACID, CYCLOALKANE  
HYDROCARBON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/1179  
CIRC ACCESSION NO--AP0123601  
STEP NO--UR/0076/70/044/002/0491/0494  
UNCLASSIFIED

2/3 012

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128601

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE METHOD OF PLANNING AN EXPT. WAS USED FOR THE STUDY AND ANAL. DESCRIPTION OF THE ADSORPTION OF A 3 COMPONENT SOLN. (PROPIONIC ACID PLUS STEARIC ACID PLUS DECALIN) ON DIATOMITE (S SUBSET EQUALS 40 M PRIME2-G, S PRIME EQUALS 5 M PRIME2-G, D SUBEFF APPROXIMATELY EQUAL TO 225 ANGSTROM AT 40DEGREES. THE CONCNS. OF PROPIONIC AND STEARIC ACIDS, X SUB1 AND X SUB2, RESP., WERE CHOSEN AS THE INDEPENDENT PARAMETERS WHILE VALUES OF ADSORPTION OF PRIONIC ACID IN THE PRESENCE OF STEARIC ACID Y SUB1 AND ADSORPTION OF STEARIC ACID IN THE PRESENCE OF PROPIONIC ACID Y SUB2 SERVED AS OPTIMIZATION PARAMETERS. THE CONDITIONS OF REALIZATION OF EXPTS., THE MATRIX OF THE PLANNING, AND RESULTS ARE TABULATED. FROM THE DATA OBTAINED THE SPACE ADSORPTION ISOTHERMS WERE CONSTRUCTED. THE ADSORPTION DATA CONFIRM THAT THE PRESENCE OF STEARIC ACID (AT X SUB2 SMALLER THAN 45 MILLIMOLES-L.) SHOWS PRACTICALLY NO EFFECT ON THE ADSORPTION OF PROPIONIC ACID FOR THE CASE OF THE DENSE FILLING OF A MONOLAYER. HOWEVER, AT X SUB1 SMALLER THAN 100-159 MILLIMOLES-L. THE ADSORPTION OF PROPIONIC ACID IS LOWER THAN THAT FROM THE BINARY MIXT. THE EQUATION  $Y_{SUB1} = 0.28 + 0.026 S_{SUB1} - 0.004X_{SUB2} - 0.017X_{SUB1} - 0.009X_{SUB2} - 0.009X_{SUB2} - 0.009X_{SUB2}$  CAN BE USED FOR DESCRIPTION OF ADSORPTION OF PROPIONIC ACID IN THE CONCNS. INTERVAL 5-10 TO 300 MILLIMOLES-L. FOR VALUES OF ADSORPTION OF STEARIC ACID IN THE PRESENCE OF PROPIONIC ACID THE FOLLOWING EQUATION WAS OBTAINED:  $Y_{SUB2} = 0.053 - 0.007X_{SUB1} + 0.019X_{SUB2} + 0.0014X_{SUB1} - 0.0046X_{SUB2} - 0.001X_{SUB1} \times X_{SUB2}$

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128601

ABSTRACT/EXTRACT--BY INTRODUCING PROPIONIC ACID IN THE MIXT. THE VALUE OF  
ABSORPTION OF STEARIC ACID IS CHANGED CONSIDERABLY: THE SUBSTITUTION OF  
MOLS. OF STEARIC ACID WITH MOLS. OF PROPIONIC ACID BEGINS IN THE  
ABSORPTION LAYER. FACILITY: SARATOV. POLITEKH. INST., SARATOV,  
USSR.

UNCLASSIFIED

USSR

UDC 541.183

GRYAZEV, N. N., RAKHLEBSKAYA, M. N. and SHEPELEVA, L. P., Saratov Polytechnical Institute, Saratov, Ministry of Higher and Secondary Specialized Education RSFSR

"Planning of Experiments on Adsorption from Three-Component Solutions  
Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 2, Feb 70, pp 491-494

Abstract: The method of planning experiments was used for the first time for the study and analytical treatment of adsorption from a three-component solution in the instance of adsorption on Inza diatomite of component of the system propionic acid - stearic acid - decalin. The process studied can serve as a model of adsorption processes connected with the purification of lubricants. The concentrations of the two acids were used as independent variables and the magnitudes of adsorption of the acids as optimization parameters. It was established that propionic acid interfered with the adsorption of stearic acid. The conditions under which the experiments were conducted, the planning matrix, and the results obtained are compiled in the form of a table. The equations that were derived made it possible to construct three-dimensional adsorption isotherms on the basis of a much smaller amount of experimental data than would be necessary if the method of statistical planning were not applied.

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UDC 547.26:118

SHEPELEVA, YE. S., SANIN, P. I., OLEYNIK, D. M., BATNIK, YE. I. and POLYAKOVA, A. A.; Institute of Petrochemical Synthesis imeni A. V. Topchiyev, USSR Academy of Sciences, Moscow

"Phosphonic Derivatives of Adamantane"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 3, 1972, pp 603-611

Abstract: The phosphonic derivatives of adamantane which have a carbon-phosphorus bond have only recently been described in the chemical literature. As is well known, one method of synthesizing organophosphorus compounds with such a bond is that of oxidizing chlorophosphorization -- that is, the reaction of halogen derivatives of trivalent phosphorus (usually phosphorus trichloride) with various hydrocarbons in the presence of oxygen. The purpose of this study was to test this method in obtaining phosphonic adamantane derivatives. To an adamantane solution within excess of phosphorus trichloride was introduced dry oxygen, the temperature of the reaction mixture being held at +3 to -5°C for 26-30 hrs. This yielded adamantylphosphonic dichloride. The authors also produced the methyl ester of adamantylphosphonic acid by reacting the acid dichloride with sodium methylate in a toluene solution, with heating. Nine derivatives of a.-p. acid were synthesized (including four isomeric forms), for

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SHEPELEVA, YE. S., et al., Doklady Akademii Nauk SSSR, Vol. 203, No 3, 1970, pp 608-611

which boiling points, compositions and spectra (infrared, mass and proton magnetic resonance) were obtained.

Tables of physico-chemical constants and suggested reaction schemes are included with the paper. Some of the data obtained differ from those published by H. STEINER and W. DIERER in 1969.

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SHEPELEVA, Ye. S.

Science  
USSR

SYNTHESIS AND INVESTIGATION OF PHOSPHONIC ACID  
ESTERS CONTAINING A TRICHLOROETHYL GROUP.  
THE PREPARATION OF CHLOROPHOSFOL

UDC 547.29.110

JPRS 56166  
5 June 1972

[Article by Ye. S. Shepeleva, N. S. Borodach, V. I. Smith, A. P. Gal'fer, Yu. S. Kazan, O. T. Kiselev, N. L. Litvinovskiy, Ya. G. Timonchenko, I. L. Fedotkin, Institute of Petrochemical Synthesis, Acad. A. V. Topolov, USSR Academy of Sciences, Moscow, Doklady Ak. Nauk, Vol. 203, No. 6, 1972, signed to press 9 July 1971, pp. 856-857]

It is known that the physiologically active phospho-organic compounds — cholinesterase inhibitors are pentavalent phosphorus compounds generally represented by the formula:



Here A and B are the framing alkyl, alkyl, aryl and other groups; X is the weak acid residue. Subsequently, the X bond with phosphorus has an unhydride character and the substance itself has the properties of a phosphorylating agent. Utilized in the capacity of group X were precursors of hydrofluoric acid and dicyclic acid, phenols and mercaptans of variable structure and others.

Trichloroalkoxy groups were used in the present work for X since it is known that the corresponding alcohols containing a trichloroethyl group are markedly acidic. A number of trichloroethylphosphoric acid esters was synthesized and investigated. Their characteristics are cited in Table 1. The synthesized esters are colorless, slightly mobile liquids with a weak aromatic scent, easily soluble in organic solvents, mineral and vegetable oils, and poorly soluble in water. The synthesis scheme includes the following reactions:

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1/2 023  
UNCLASSIFIED  
TITLE--FREQUENCY STABILIZATION AND CONVERSION OUTPUT SIGNAL SPECTRAL  
LINEWIDTH -U-  
AUTHOR-(02)-MALAKHOV, A.N., SHEPELEVICH, L.G.  
PROCESSING DATE--13NOV70  
COUNTRY OF INFO--USSR  
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA (RADIO AND ELECTRONICS), 1970, NO 2,  
PP 328-333  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--FREQUENCY STABILITY, FREQUENCY CONVERSION, FREQUENCY DIVIDER,  
SPECTRAL LINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3003/1860  
CIRC ACCESSION NO--AP0130687  
STEP NO--UR/0109/70/000/002/0328/0333  
UNCLASSIFIED

2/2 023  
CIRC ACCESSION NO--AP0130687  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. THE NONLINEAR CALCULATION IS MADE OF THE NATURAL SPECTRAL LINEWIDTH OF THE OUTPUT SIGNAL OF A FREQUENCY STABILIZATION AND CONVERSION SYSTEM (FOR MONOCHROMATIC INPUT). IT IS SHOWN THAT IN CONTRAST WITH MULTIPLIERS IN FREQUENCY SYNCHRONIZATION SYSTEMS AT THE SUBHARMONICS AND IN DIVIDERS THERE IS A BROADENING OF THE SPECTRAL LINE.

UNCLASSIFIED

USSR

UDC 535

SHALTYKO, L. G., SHEPELEVSKIY, A. A., FRENKEL', S. Ya.

"Small-Angle Scattering of Light in Liquid Crystals"

Uch. zap. Ivanov. gos. ped. in-t (Scientific Notes of Ivanovo State Pedagogical Institute), 1972, Vol. 99, pp 124-146 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D783)

Translation: The scattering intensities of polarized light from three models of optically anisotropic structures encountered in lyotropic liquid crystals are calculated. These were an optically anisotropic cylinder with a cholester distribution of the polarization capacity within it, an optically anisotropic cylindrical shell, and an optically anisotropic torus. The corresponding diffraction formulas were obtained. The theoretical distribution of intensity obtained by computer tabulation of the functions satisfactorily corresponds to the experimentally obtained pictures of small-angle scattering of light from lyotropic liquid crystals of poly- $\gamma$ -benzyl-L-glutamate. 34 ref. Resume.

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USSR

SILICH, V. A., SHEPELINA, M. M.

"Program for Construction of Linear Set Regression Equations"

Kibernetika i vuz. [Cybernetics and the University -- Collection of Works], Tomsk, Tomsk University Press, No 4, 1971, pp 164-173, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V717 by the author's).

Translation: A brief description is presented of an algorithm and program for construction of linear set regression equations using the method of set correlation analysis in ALPHA-language and machine language for the MIR-1 computer.

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USSR

KHARITONOV, B. S. and SHEPEL'KOVA, L. V.

"Calculation of the Mean Number of Addition-Subtraction Cycles Using the Theory of the Full n-Group of Numbers"

Raschet Srednego Kolichestva Taktov Slozheniy-Vychitaniy s Ispol'zovaniyem Teorii Polnoy n-Gruppy Chisel. [English Version Above], Frunze, 1973, 6 pp (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V631 Dep).

Translation: Using the theory of the full n-group of numbers, a method is developed for calculation of the mean number of addition-subtraction cycles involved in the performance of multiplication operations in electronic computers. The calculation is performed for three different multiplication algorithms: with analysis of each digit of a factor, with analysis of two digits and using sequences of zeros and ones. The data produced are compared with the results of similar calculations performed by M. A. Kartsev, Yu. V. Gavrilov and A. N. Puchko using a different method.

Authors' view

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1/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--HOT ELECTRON PHOTOMAGNETIC EFFECT AND PHOTOCONDUCTIVITY -U-  
AUTHOR--(03)-LAZAREV, S.D., SHEPELSKIY, G.A., YEFREMOVA, G.D.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 419-21  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PHOTOMAGNETIC EFFECT, PHOTOCONDUCTIVITY, ELECTRON TEMPERATURE,  
INDIUM ANTIMONIDE SEMICONDUCTOR, CARRIER DENSITY, VOLTAGE STABILIZATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0090 STEP NO--UR/0449/70/004/002/0419/0421  
CIRC ACCESSION NO--AP0105176  
UNCLASSIFIED



2/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70  
CIRC ACCESSION NO--AP0105176  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRON HEATING IN THE PHOTOMAGNETIC EFFECT (V. ABAKUMOV, ET AL., 1968) WAS STUDIED FOR NINSB SAMPLES IRRADIATED WITH ULTRAHIGH FREQUENCY RADIATION IN THE PRESENCE OF A QUANTIZING MAGNETIC FIELD. IN THIS CASE, AN EMF. ORIGINATES WHICH IS UNEVEN ALONG THE MAGNETIC FIELD (PHOTOTHERMOMAGNETIC EFFECT) (A. VYSTAVKIN, ET AL., 1963). THE CHANGE IN THE VOLTAGE FOR THIS EFFECT OSCILLATES; THE PHASE AND PERIOD OF THE OSCILLATIONS ARE DETD. BY THE ELECTRON CONC. A COMPARISON OF THE FIELD DEPENDENCE FOR THE PHOTOTHERMOMAGNETIC AND PHOTOMAGNETIC EFFECTS SHOWED THAT THE 2 CURVES ARE SIMILAR. THE CHANGE IN THE SIGNS OF THE EFFECTS OCCURS AT THE SAME VALUE OF THE FIELD. BOTH CURVES EXHIBIT A SPIN SPLITTING OF THE 1ST MIN.

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USSR

LAZAREV, S. D., et al, Fizika Tverdogo Tela, No 11, Nov 70, pp 3317-3319

experiment with light intensities  $I = 10^{17}$  quanta/cm<sup>2</sup>:sec in degenerate samples with electron concentrations  $n > 10^{15}$  cm<sup>-3</sup>. With purer samples of n-InSb ( $n = 10^{13}$ - $10^{14}$  cm<sup>-3</sup> but still  $\Delta n \ll n$ ) the heating of a smaller number of electrons and, naturally, a smaller light energy are required. The photomagnetic effect was measured as a function of light intensity at temperatures of 4.2° and 78°K. At helium temperatures there was observed a distinct nonlinear segment in the photomagnetic effect: the photomagnetic emf is saturated and then drops with an increase in light intensity. The intensity at which the nonlinear segment begins is a function of the magnetic field strength H.

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Acc. Nr: AP0038028

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy  
Fiziki, 1970, Vol 58, Nr 1, pp 60-67QUANTUM OSCILLATIONS OF PHOTOMAGNETIC EFFECTS  
AND PHOTOCONDUCTIVITY IN InSb AND InAsKikoin, I. K.; Lazarev, S. D.; Shepel'skiy, G. A.;  
Yefremova, G. D.

Quantum oscillations of photomagnetic phenomena in the degenerate semiconductors  $n$ -InSb and  $n$ -InAs are investigated in magnetic fields up to 50 kOe and temperatures between 1.8 and 4.2° K. At magnetic field strengths at which the photomagnetic e.m.f. changes sign (anomalous region) a pronounced nonlinear dependence of the photomagnetic effects on incident light intensity is observed under conditions of weak illumination ( $\Delta n \ll n$ ). With increase of light intensity the photomagnetic e.m.f. passes through a maximum and then changes sign. Photoconductivity in a magnetic field was studied in the same samples. A negative photoconductivity in a transverse magnetic field was observed. A theoretical interpretation of the anomalous phenomena apparently requires that the role of not electrons be taken into account.

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19731069

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USSR  
Aluminum and Its Alloys

USSR

UDC: 621.762.2:669.71

ZHILKIN, V. Z., GORBUNOV, Yu. A., SHEPEL'SKIY, N. V.

"Methods of Granulation of Aluminum Melts"

Liteyn. Proiz-vo, Metalloved. i Obrabotka Met. Davleniyem [Foundry Production Metal Science and Pressure Working of Metals -- Collection of Works], No 6, Krasnoyarsk, 1972, pp 95-100 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G391, by the authors).

Translation: Methods are studied for production of Al granules, based on centrifugation and vibration of a melt. The characteristics are presented for installations using these principles. Modes of production of granules satisfying the technological conditions of rolling are determined. Due to the low productivity of vibration installations, centrifugal casting of granules is recommended for production conditions. 3 figures.